

REMARKS - General

With respect to the examiner's remark (1) in the Office Letter dated 24 March 2003, the inventor acknowledges the examiner's objection to claims 24-77 based on improper form. Claim 24 and Claims 25-77 (dependent on Claim 24) have been amended to reflect proper claim sentence structure as set forth in 608.01(m).

With respect to the examiner's remarks (2) and (3) in the Office Letter dated 24 March 2003, the examiner opines that the subject matter of dependent claims 25 and 27 do not have basis in the inventor's specification. With respect to Claim 25, the Applicant notes that the support for the "ammonium-free source of inorganic nitrogen" is provided in the specification (page 14, first paragraph). The Applicant acknowledges that the specification does provide basis for the more restricted upper range of 7.5% in Claim 25 as amended in the Applicant's Amendment A. As per the Applicant's teleconference with the Examiner conducted on 7/1/03, Claim 25 has been amended herein to delete the percentage range for the "ammonium-free source of inorganic nitrogen" as it had been the inventor's intent that this be a minor or accessory component of the subject composition and that the upper end of the range provided in the Applicant's original specification (i.e., 30%) is not desirable.

The Applicant also acknowledges that the Markush group of Claim 27 is not supported in the inventor's original specification. Claim 27 is deleted herein.

With respect to the examiner's remarks (4) and (5) in the Office Letter dated 24 March 2003, the examiner rejects claims 24-77 as being indefinite. With the exception of claim 35, the Applicant has generally accepted the Examiner's suggested changes to the wording of these claims, as reflected by revised claims 24-77 as amended herein. With respect to claim 35, the Examiner's suggested wording would materially change the meaning of the claim as intended by the Applicant. Accordingly, the Applicant has rewritten claim 35 in a manner that seeks to make the claim definite while maintaining the subject matter and purpose of the claim based on the disclosures in the inventor's specification (page 15). The Applicant is not seeking to claim the use of "ferric oxides, hydroxides and oxyhydroxides" per se in the current composition but rather

to claim the use of the microorganisms that are intermingled with the well known "yellow boy" deposits found in association with acid-mine drainage (and sometimes produced by the treatment of acid mine drainage)¹. For clarification and not limitation, it has been the inventor's belief that the microorganisms associated with acid-mine drainage and "yellow boy" deposits may have capabilities that would be beneficial for the bioremediation of environmental contaminants. Hence, the intent of claim 35 is to use the yellow-boy / acid-mine drainage deposits as a source of inoculum for such microorganisms in the inventor's composition.

With respect to the examiner's remark (6) in the Office Letter dated 24 March 2003, applicant acknowledges the examination of this application under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

With respect to the examiner's remark (8) in the Office Letter dated 24 March 2003, the Examiner rejects claims 24, 29, 33, 36, 68, 72 and 74-76 as either being anticipated by the "newly cited" Pinckard et al. under 35 U.S.C. 102(b), or, in the alternative, obvious from Pinckard et al. under 35 U.S.C. 103(a). The Applicant notes that Pinckard et al. was cited and differentiated from the present invention in the prior-art section of the Applicant's original application (page 6, last paragraph). The applicant hereby incorporates by reference the differences between the prior art of Pinckard et al. and the present invention as stated in the inventor's original application.

As per the Applicant's telephone conference with the Examiner on 7/1/03, the present invention would clearly not be anticipated from Pinckard et al. under 35 U.S.C. 102(b) or obvious from Pinckard et al. under 35 U.S.C. 102(b) as Pinckard et al. is different than and teaches away from the composition of the present invention. As discussed with the Examiner, a critical difference between Pinckard et al. and the present invention is that Pinckard et al. teach a method for bioremediation that involves the preparation of a "special compost" prepared from plant materials.

¹ "Yellow boy" is a widely-used term throughout the field of mining geology and refers to the yellow-orange to red-colored deposits of iron oxides, hydroxides and oxyhydroxides (and other minerals) that are believed to be biogenically produced in acid-mine drainage environments. In other words, "yellow boy" is believed to be formed by the activity of microorganisms, such as iron bacteria.

By contrast, the present invention teaches a composition for bioremediation that comprises a dry mixture of non-composted plant materials. Whereas at first glance some of the raw materials used to prepare the "special compost" of Pinckard et al. appear similar to some of the raw materials used in the inventor's composition, the chemical composition of the "special compost" (or "special humic substrate") of Pinckard et al. is substantially different than the present invention, as compost is widely recognized by persons of ordinary skill in the art to be significantly different in its chemical composition than the original (i.e., non-composted) plant materials². Hence, Pinckard et al. "teaches away" from the present invention. Pinckard et al. disclose specific details of the preparation and application processes for their "special compost," e.g., the addition of moisture and the balancing of carbon-to-nitrogen ratios to optimize the composting process, that clearly teach away from the art of the present invention. For example, such water additions (as taught by Pinckard et al.) could adversely affect the inventor's composition, e.g., by promoting the premature biodegradation of the plant materials, as well as reduce the shelf-life of the composition after preparation. More importantly, the composting process would significantly alter the chemistry and fibrous structure of the plant materials used in the inventor's composition that would render these materials unsuitable for use in the inventor's composition for most if not all of the applications disclosed by the inventor.

The intrinsic qualities and advantages of the solid-chemical composition of the present invention provide several benefits that would neither be anticipated by or obvious from Pinckard et al. First, the inventor's composition enables simpler and more flexible means for bioremediation than the comparatively more limited, compost-based process of Pinckard et al. In particular, the inventor's composition can be applied directly to contaminated environmental media or contaminated environments using a variety of application means or methods that are independent of the limitations of the composting-based method of Pinckard et al (see inventor's specification-page 8, last paragraph). For example, the inventor's composition can be (i) applied directly to contaminant spills to absorb and subsequently promote the biodegradation of contaminants; (ii) applied directly to contaminated soils for in-situ bioremediation (as opposed to more complicated

² Pinckard et al. do not disclose the use of plant materials from the families *Phaeophyta* or *Cannabaceae* as in the present invention.

ex-situ treatment), and (iii) applied in value-added forms such as pellets, granules and briquettes to both simplify the aforementioned applications and to facilitate other applications unforeseen by Pinckard et al. such as the remediation of contaminated sediments in lakes, rivers and streams (see specification, page 18, second paragraph).

Another key difference between the compost-related method of Pinckard et al. and the inventor's composition is the inventor's clear and consistent emphasis on anaerobic bioremediation processes discussed throughout the inventor's specification. When prepared and used as disclosed in the inventor's specification, the plant materials in the inventor's composition are designed to create and maintain anaerobic and reducing conditions that are favorable to anaerobic bioremediation and biologically mediated chemical reduction processes (specification-pages 1-2, 5, 8-11 etc.). Pinckard et al. is silent with respect to the anaerobic bioremediation and chemical reduction processes described in the inventor's specification. By contrast, the "special compost" or "special humic substrate" of Pinckard et al., by its very nature of being an already biodegraded, composted material, would have a greatly diminished ability to create and maintain anaerobic conditions relative to the inventor's composition. The inventor's composition, (having not undergone prior decomposition via a composting process such as in Pinckard et al.), has an inherently greater ability to consume oxygen or other high-energy microbial electron acceptors so as to create and maintain anaerobic and reducing conditions, as intended and disclosed by the inventor in the specification. Pinckard et al. make no disclosures concerning creating and maintaining anaerobic conditions as in the present invention. Accordingly, it is clear that the subject claims of the present invention are neither anticipated by or obvious from Pinckard et al.

In order to make a further distinction between the subject art of the present invention and that of Pinckard et al., the inventor has further revised generic Claim 24 herein so as to include additional limiting language such as the clear and specific reference to "anaerobic bioremediation" (see above references to the specification) and the use of "dry" plant materials (specification, pages 13, 16).

With respect to the examiner's remark (9) in the Office Letter dated 24 March 2003, the Examiner rejects claims 24-28, 30-31, 33, 37-40, 42, 44-48, 50-51, 53, 57-60, 72, 74, 66-70, 72 and 74-77 on the basis that the subject claims would either be anticipated by the newly cited

Clarke et al under 35 U.S.C. 102(e) or, alternatively, obvious from Clarke et al. under 35 U.S.C. 103(a).

As discussed with the Examiner on 7/1/03, the Applicant fails to note any significant or specific similarities between the present invention and that of Clarke et al. that would warrant rejection of the subject claims under either 35 U.S.C. 102(e) or 35 U.S.C. 103(a). First, the reference to Clarke et al. is clearly non-analogous art to the field of the present invention. Second, the invention of Clarke et al. teaches means for preparing gum materials from a wide variety of different plant materials. According to Clarke et al., the plant materials disclosed³ (and referenced in the Examiner's remarks) are merely the raw materials from which such gums are produced. Finally, Clark et al. do not disclose any compositions containing such "raw" (i.e., unprocessed) plant materials as in the present invention. Hence, the invention of Clark et al. and the solid-chemical composition of the present invention are very different. This point was acknowledged by both the Applicant and the Examiners in the telephone conference conducted on 7/1/03.

Given that (a) Clark et al is non-analogous art relative to the field of the present invention and (b) that the gum-production process of Clark et al. is significantly different than and substantially irrelevant to the present invention, it is inconceivable that a person of ordinary skill in the art of the present invention would consult Clark et al. to derive the present invention. Hence, the present invention would neither be anticipated by or obvious from Clarke et al, such that there is no basis for the rejection of the subject claims of the present invention under either 35 U.S.C. 102(e) or 35 U.S.C. 103(a).

With respect to the examiner's remarks (10) and (11) in the Office Letter dated 24 March 2003, that Examiner has rejected claims 24-77 as being unpatentable over claims 1-32 of U.S. Patent No. 6,423,531 to Hince et al. under the judicially created doctrine of obviousness-type double patenting. For the record, both the current patent application and the application for USP 6,423,531 were filed by the same inventors, i.e., Hince et al., and assigned to the same assignee within two days of one another. As both applications derived from the same "inventive entity," there

³ Clarke et al. also do not disclose the use of plant materials from the families *Phaeophyta* or *Cannabaceae* as in the present invention.

is no basis for the Examiner to reject the subject claims on the grounds of the "judicially created public policy" versus a provisional rejection under the applicable statute. The public policy concerning the doctrine of double-patenting seeks to prevent the "improper timewise extension" of a patent or public "harassment by multiple assignees" of the same patent. The applications for the current invention and USP 6,423,531 to Hince et al. were filed within two days of one another by the same inventors and assigned to the same assignee--accordingly, the public policy is clearly not contravened by the current invention and USP 6,423,531.

It is the Applicant's belief that the subject claims of the present invention are patentably distinct from USP 6,423,531 to Hince et al. The applicant requests that the Examiner remove the rejections to the subject claims of the present invention and to examine the claims of the present invention relative to USP 6,423,531 to Hince et al. in view of the information provided below.

For clarification, the current application and the applications for USP 6,423,531 to Hince et al. and USP 6,432,693 to Hince were filed within a similar time frame in November 1999. These applications concerned different compositions (and related methods of use) that resulted from a number of inter-related research experiments on anaerobic bioremediation conducted by the inventor(s). Accordingly, these applications share certain similarities with respect to the prior art cited, the field of the invention, and portions of their specifications. The similarity in claim structure and wording used in these applications simply reflects that these applications were prepared as a group during the same time period and by the same inventors. Regardless of these similarities, the subject solid-chemical compositions in each application are patentably distinct from one another, as recognized by the Examiners of record for USP 6,423,531 to Hince et al. and USP 6,432,693 to Hince.

The composition of the current invention and the compositions of USP 6,423,531 and USP 6,432,693 are each different from one another. For example, the current composition comprises a specific mixture of plant materials (e.g., claim 24), whereas the composition of USP 6,432,693 comprises a "geochemical" mixture of metal particles and minerals (e.g., claim 1). By comparison, USP 6,423,531 comprises a combination of plant materials and geochemical media (e.g., claim 1). During the invention process and in the preparation of the applications for these aforementioned inventions, the Applicant recognized that each of these compositions was different and had certain separate and distinct applications despite the fact that there was some overlap in the (same) field

of application of these inventions. For example, the current composition, in its simplest preferred embodiment (e.g., claim 24), could be used as a "biodegradable absorbent" for a range of applications that neither USP 6,423,531 or USP 6,432,693 would be suitable for.

Based on the foregoing, the Applicant decided to file three separate and timely applications for these inventions rather than to file an overly cumbersome and voluminous single application that would have placed an undue burden on the U.S. Patent Office. As evidenced by the issuance of USP 6,423,531 and USP 6,432,693 and as per current USPTO policies and practices, a voluminous single application would have been subject to claims restrictions for examination purposes.

With respect to the examiner's remark (12) in the Office Letter dated 24 March 2003, the Examiner has provisionally rejected claims 24-77 as being unpatentable over co-pending Application No. 09/690,419 under the judicially created doctrine of obviousness-type double patenting. The Applicant notes that a terminal disclaimer was previously filed for Application No. 09/690,419 to resolve this issue with respect to the subject matter of the present invention. As noted by Senior Examiner Naff in the Applicant's telephone conference with Examiners Ware and Naff on 7/1/03, these provisional rejections should be removed in view of the Applicant's having previously filed a proper terminal disclaimer for co-pending Application No. 09/690,419.

Conclusion

For all of the above reasons, applicant submits that the claims are now in proper form, and that the subject matter of the present invention is clearly defined and non-obvious relative to the prior art cited by the examiner. Therefore, applicant submits that this application is now in condition for allowance, which action he respectfully solicits.

Conditional Request for Constructive Assistance

Applicant has amended this application so as to define the present invention by claims that are proper and definite, and which define a subject matter that is novel and also unobvious. If, for any reason, this application is not believed to be in full condition for allowance, applicant respectfully requests the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P. §2173.02 and §707.07(j) in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Very respectfully,



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July 24, 2003


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Amendment B: Ser. No. 09/440,340

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